

CRITERIA FOR EVALUATING HAZARDOUS MATERIALS

Defining "Hazardous"

The criteria used to define chemicals as "hazardous" have evolved from several properties that are harmful to people and property. The most obvious of these criteria are the following:

- . Flammable - The material can catch fire or explode.
- . Toxic - The material can be harmful if individuals are exposed to it briefly or over long periods of time. The exposure could come about through ingestion (swallowing it), inhalation, or absorption through the skin or eyes.
- . Reactive - The material can release harmful by-products if subjected to certain environmental changes such as heat or pressure.
- . Corrosive - The material has caustic or acid-like properties.

How These Criteria Relate to Material Data Safety Data Sheets

Materials that fall into any of the above categories are to be considered "hazardous," but may be identified in different sections of the Material Safety Data Sheets, depending on the specific hazard. The guidelines:

<u>Hazard</u>	<u>Listing Category</u>
Flammable	Section IV: "Fire and Explosion Data"
Toxic	
Hazardous when inhaled	Section II - "Hazardous Ingredients"
	Section V - "Health Hazard Information"
Hazardous when ingested or absorbed through skin	Section V
Reactive	Section VI
Corrosive	Section V

Determining Degree of Hazard

The following guidelines should be followed when evaluating the flammability or inhalation toxicity of a material.

- . Flash Point - The temperature to which the substance must be heated (under defined conditions) before a flame will ignite the vapor above the substance.

The following degrees of hazard have been established:

Combustible liquid - A liquid having a flash point at or above 100 degrees Fahrenheit (37.8 degrees Centigrade).

Combustible liquids are subdivided as follows:

Class II liquids shall include those having flash points at or above 100 degrees Fahrenheit (37.8 degrees Centigrade) and below 140 degrees Fahrenheit (60 degrees Centigrade).

Class IIIA liquids shall include those having flash points at or above 140 degrees Fahrenheit (60 degrees Centigrade) and below 200 degrees Fahrenheit (93 degrees Centigrade).

Class IIIB liquids shall include those having flash points at or above 200 degrees Fahrenheit (93 degrees Centigrade).

Flammable liquid - a liquid having a flash point below 100 degrees Fahrenheit (37.8 degrees Centigrade) and having a vapor pressure not exceeding 40 lbs. per square inch (absolute) (2,068 mm Hg) at 100 degrees Fahrenheit (37.8 degrees Centigrade) shall be known as a Class I liquid.

Class I liquids shall be divided as follows:

Class IA shall include those having flash points below 73 degrees Fahrenheit (22.8 degrees Centigrade) and having a boiling point below 100 degrees Fahrenheit (37.8 degrees Centigrade).

Class IB shall include those having flash points below 73 degrees Fahrenheit (22.8 degrees Centigrade) and having a boiling point at or above 100 degrees Fahrenheit (37.8 degrees Centigrade).

Class IC shall include those having flash points at or above 73 degrees Fahrenheit (22.8 degrees Centigrade) and below 100 degrees Fahrenheit (37.8 degrees Centigrade).

Note: Information taken from the National Fire Codes 1986, Vol. 1, "Flammable and Combustible Liquid Code (NFPA 30-1989)," National Fire Protection Association.

Toxicity

The following cases are commonly used when describing levels of toxicity:

Combined Tabulation of Toxicity Classes*

Commonly Used Term	LD Single Oral Dose for (g/kg)	4-hour Vapor Exposure Causing 2 to 4 Deaths in 6 Rat Groups (ppm)	LD Skin for Rabbits (g/kg)	Probable Lethal Dose For Man
Extremely Toxic	0.001 or less	Less than 10	0.005 or less	Taste (1 grain)
Highly Toxic	0.001 to 0.05	10 to 100	0.005 to 0.043	1 tsp. (4 cc)
Moderately Toxic	0.05 to 0.5	100 to 1000	0.044 to 0.340	1 oz. (30 gm)
Slightly Toxic	0.5 to 5.0	1000 to 10,000	0.35 to 2.81	1 pint (250 gm)
Practically Non-Toxic	5.0 to 15.0	10,000 to 100,000	2.82 to 22.6	1 quart
Relatively	>15.0	>100,000	>22.6	> 1 quart

* Information taken from Olishifski, J.B., ed., Fundamentals of Industrial Hygiene. 2nd ed. Chicago: National Safety Council, 1979.

LISTING HAZARDOUS CHEMICALS

HOW TO IDENTIFY HAZARDOUS CHEMICALS

Hazard Determination

The responsibility for determining whether a chemical is hazardous lies with the chemical manufacturer or importer of a chemical. As a user of chemicals, you may rely on the evaluation received from these suppliers through labels on containers and MSDS.

Definition

A hazardous chemical is defined as any chemical which is a physical or health hazard. This includes chemicals which are combustible liquid, compressed gas, explosive, flammable, organic peroxide, oxidizer, pyrophoric, unstable (reactive), water reactive, toxic, highly toxic, carcinogen, reproductive toxin, irritant, corrosive, sensitizer, hepatotoxin, nephrotoxin, neurotoxin agents which act on the hematopoietic (blood forming) system, and agents which damage the lungs, skin, eyes or mucous membranes.

Minimum List ("Floor List")

A Minimum List of hazardous chemicals, often called the "floor list" is provided in Appendix C. At a minimum the following chemicals are considered hazardous:

- . Regulated by OSHA in 29 CFR Part 1910 Subpart Z
- . Included in the American Conference of Governmental Industrial Hygienist (ACGIH) latest edition of Threshold Limits Values For Chemical Substances and Physical Agents in the Work Environment
- . Listed in the latest edition of the National Toxicology Program's Annual Report on Carcinogens
- . Listed in the latest edition of the International Agency for Research on Cancer (IARC) monographs

Mixtures

If a mixture is not evaluated specifically by the manufacturer or importer, assume it is hazardous if the mixture meets any of the following:

- . Contains 1% or more of any chemical in the floor list
- . Contains 0.1% or greater of a carcinogen
- . Under conditions of use, the mixture could release concentrations that exceed recommended or legal exposure limits of any component

Mixtures produced by work operations such as fumes, vapors or dusts should also be evaluated using these guidelines.

CONSUMER PRODUCTS

Consumer products purchased for employee use are considered hazardous if they fit the definition of hazardous chemical(s).

HOW TO LIST CHEMICALS IN THE WORKPLACE

- . List all hazardous chemicals known to be present in your workplace. Use a name that appears both on the MSDS and the container label. A convenient form is provided in Exhibit 1A.
- . The list is to be an inventory of everything for which a MSDS must be obtained. It will be part of the written program, and must be available to employees upon request.
- . In addition to obvious chemicals such as solvents, one should also include commercial products such as adhesives, aerosols, cleaning agents, detergents, glues, inks, janitorial supplies, paints and surfactants.